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**PENETRATING THE SPACE MEDIUM:
A ROADMAP FOR ALLIANCE/COALITIONS**

by

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Preface

This project stems from many years of observation. Since my early introduction into the military of the early 1970's I have been interested in the role that culture plays on military forces in general. The Vietnam era was referred to in many cases as a conflict in culture. In the 1980's I produced a master's thesis that examined the difference in cultures between U.S. military and the indigenous British population in the area around RAF Alconbury. Now the present project reflects on cultural differences that impact alliances and coalitions as the global arena brought about by the information age becomes reality. It is rich soil still awaiting tilling.

This research reflects a myriad of contacts over the year. In the past eight months, discussions with Colonel Vic Budura have been the most fruitful, both for his enthusiasm towards this theme of endeavor and for his support on all my initiatives. Thanks Vic! I was most fortunate to converse on the issues with several outstanding members out in the field. For the command vision, General Chuck Horner was exemplary in providing me insights despite his busy schedule. Dr. Chuck White, was gracious to elaborate on the concept of *Bildung* from the historical and cultural perspective. There are countless others that contributed both in providing perspectives and time towards understanding where I was taking this effort. To all the unnamed, my appreciation for your support will never be equal to your kindness.

Abstract

As the 21st century rapidly approaches, the evolving global community is experiencing a reevaluation of culture's role as it transcends into the space medium. The fourth dimension of space is becoming a legitimate frontier for future alliance/coalitions. However, the ability to acquire access for alliance/coalition members will be dependent upon space-faring nations willingness to share expensive and vulnerable technologies. This technological dependency could undermine the fabric of the multinational relationship. The roadmap is offered as a means for future alliance/coalitions to proceed. It is built on the premise that the foundation for alliance/coalition progress is based on increased cultural awareness. It is through greater understanding of the cultural mindset that increased interaction between the member nations of alliance/coalitions can be accomplished. The paper will explore opportunities for improved interaction, to include expanding the influence of alliance/coalitions on command structures and increasing cultural awareness opportunities within the military at large.

CHAPTER 1

Introduction

The Gulf War is described as the first war of the 21st Century. It highlighted the way military forces employed space, the fourth medium of combat. Following the conflict, General Charles A. Horner, newly appointed Commander-in-Chief of United States Space Command (USSPACECOM), commented that space as a war-fighting medium was introduced late when final planning was pushed to initiate the air and subsequent ground campaign.¹ Based on that experience, when General Horner assumed command of USSPACECOM in 1994, he directed that space become integrated within the planning of the regional CINC's through an aggressive space orientation program and implementation of liaison elements within the theater. After four years, this effort continues to evolve.

Today, USSPACECOM employs Joint Space Support Teams (JSST) with the mission of providing direct support to theater operations.² Additionally, at the subordinate command echelon, Air, Army, and Navy Space Support Teams complement the effort through direct support to the regional service commands. This experience has provided numerous opportunities for introducing space to regional war-fighters. It has

introduced new and evolving challenges for the future. In particular, the space medium is quickly being introduced to alliance and coalition military operations.

Space represents the new frontier, posing a challenge for future employment and further exploration. It is an essential part of the National Security Strategy (NSS). Global partnerships with space-faring nations are sought across the spectrum of economic, political, and security issues.³ Reaching space requires the most sophisticated technologies available. Today, only nine nations possess the capability to directly access space. The remaining nations must depend on international agreements, alliance/coalitions, or the marketplace. The space medium poses an important challenge for present and future alliance and coalition architectures. To assist this challenge, the following analysis presents a roadmap for alliance/coalitions to penetrate the space medium.

¹ David N. Spires, *Beyond Horizons, A Half Century of Air Force Space Leadership* (Peterson AFB, CO: Air Force Space Command, 1997), 284.

² Unified Military Directive (UMD) 38-21, *Space Support Team Operations*, 26 October 1995, 1.

³ The White House. *A National Security Strategy for a New Century* (May 1997), 14.

CHAPTER 2

The Global Arena

“Neighbors, not Nations.”

--Jim Miller, Cable News Network (CNN)¹

Global changes are well underway in the final days of the 20th century. The commercial computer and telecommunications world of the 90's defines the information age. Computers and information networks have evolved into an emerging social structure that is wholly dependent on the potential and flexibility of data.² Global interdependence gains greater significance as each nation becomes emerged within the mediums of cyberspace and information. The expanding marketplace brings the electronic image to households throughout the world. First-hand exposure to significant information is today's reality. News networks have supplemented and in some cases replaced traditional sources of national intelligence. Worldwide access to increasing volumes of information suggests a redefinition of world order, a new worldview. CNN's senior producer portends a global neighborhood, not a traditional community of nations. These perceptions have implications for future military forces and operations as well. The global vision of neighborhoods does not assure peaceful co-existence. History shows that some of the most violent experiences in this century were conflicts among neighbors; India/Pakistan, Rwanda/Burundi and Bosnia/Herzegovina are cases in point.

Despite these human shortfalls, modern technology is creating a new look to the way nations interact.

With the 21st century rapidly approaching, the new global community will require a reevaluation of cultures role as it advances into the space medium. If the fourth medium of space is to become the legitimate frontier for future global war-fighters it will require a similar rethinking. Operating a military space environment will require seeing the world through different visions. If the United States is serious about global space then it needs to establish a space force that is culturally aware on a global scale. This requires developing a strategy to integrated alliance/coalition relationships into the majority of planning, both short and long-term. Policy needs to consider the global vision and work with alliance members to create new avenues for military space employment. Developing an architecture for space requires intercultural frameworks be established now.

The 21st century adversary in the global arena is not your traditional enemy. Weapons of mass destruction (WMD) comprising nuclear, chemical, and biological threats will remain a major challenge. Adversaries will be able to obtain commercial space technology through the evolving marketplace. This affects conventional planning and operations. Operational maneuvers could be scrutinized closely through the proliferation of available information gathering systems. Adversaries will be able to invest in high-technology assets such as ballistic or cruise missiles that can be employed asymmetrically against alliance/coalitions. This will affect alliance/coalition abilities to pre-position forces. Additionally, transnational threats, which include terrorists, drug

traders, and members of organized crime, are acquiring the ability to employ modern information technology to provide a power base equivalent to that of some state actors.³

Achieving mutual benefit in a global community through membership in an alliance/coalition is quickly becoming the standard for military action today. Evolving definitions of nation states may see nations without borders in a realm of cyberspace. The maturing commercial marketplace sets the stage for future thinking. Information proliferation served through the space medium creates new arenas for potential conflict such as the evolving concept of Information Operations (IO). Penetrating the space medium could become an objective for all nations, regardless of the fact of having a capability or not. Alliance/coalitions will become focused on this new challenge. What is called for is establishing a comfort level with the evolving national identity prior to transiting into the future. It requires a thorough knowledge of culture.

In this evolving global framework new priorities are being placed on defining the space medium. Greater importance will be given to systems that reinforce global awareness. Increased interdependence resulting from improved information exchanges influences the way people interact. Military alliances and coalitions are redefined. The nuclear era prompted a real concern of annihilation of mankind, where the information age envisions strengthened relationships. Within an atmosphere of constant information access, the term unilateral could become a political anachronism in the 21st century. Implications for the unfolding space medium are yet to be determined.

¹ Jim Miller, CNN Senior Producer, interviewed by author, 11 November 1997.

² Gretchen Bender and Timothy Druckrey, ed., *Culture on the Brink, Ideologies of Technology* (Seattle, WA: Bay Press, 1994), 9.

³ Daniel Goure and Christopher M. Szara, ed., *Air and Space Power in the New Millenium* (Washington, D.C.: The Center for Strategic & International Studies, 1997), 103

CHAPTER 3

***Bildung*—A Catalyst for Progress**

“Ignorance lowers and disgraces the military and often the entire state.”

--Gerhard Johann David Scharnhorst¹

History is full of cultural transformation experiences, particularly at the turn of the century mark. The approaching 21st century shows great promise for a global worldview community. In turn, a hundred years ago, technology and industry prepared the way for the invention of the airplane and its successful penetration of the third medium. A parallel phenomena occurred in modern Western society as the 19th century got underway. The newly created United States, the French Revolution and the subsequent era of Napoleon with its formation of citizen armies revolutionized the way nations fought and influenced the conduct of warfare. The thinking in this era of enlightenment sought to find solutions to the transitions underway. Throughout the epoch, parochial ignorance of the changes was commonplace within established thinking. “I am everyday more and more convinced of the necessity of military reading.” reflected Lord Cornwallis, a few years after his defeat at Yorktown.² One contemporary visionary who defied parochial thinking and its prevailing ignorance and took European military culture forward into the modern era was Scharnhorst.

Scharnhorst, mentor of Clausewitz, offered solutions towards transforming traditional military norms in a more effective direction.³ His worldview revolved around

the Germanic concept of *Bildung*, literally translating into the term ‘culture.’ *Bildung* advocated the perfectibility of individual character and intellect through education—in short, create a ‘mental fitness.’⁴ This application challenged a prevailing attitude entrenched within the military cultures of Scharnhorst’s day. His dilemma revolved around the ruling parochial view that upheld the nobility’s military value over middle class officers. In the early 18th century, Frederick the Great had championed the rights of the Junkers, the sons of the nobility. The royal perception was that middle class culture was not capable of honor and could not be counted on in the heat of battle to bear hardship, danger and even death without flinching or without expecting some reward.⁵ Scharnhorst and subsequent military thinkers of the early 19th century sought to resolve this cultural stigma and develop a professional competence in the Prussian officer corps to guarantee proficiency in the art of war and defeat the greatest threat of the day posed by Napoleon.⁶

Scharnhorst confronted the prevailing ignorance of the day by expanding on prevailing definitions of culture. This not only included adapting to technological advances but also assimilating to new ways of thinking beyond the parochial framework. Scharnhorst’s way of thinking, developed from the age of enlightenment, was linked to the historical experience, encompassing the political, human, and military conditions that formed reality.⁷ He encouraged pushing society to new limits of thinking by laying the foundation for “the discovery and introduction of newer, better, and simpler methods and means that lead to victory.”⁸ This led to a re-education for victory by developing leaders capable of commanding the nation-in-arms. Prussian nobility did not necessarily equate to military intelligentsia. By exercising *Bildung*, Scharnhorst created the concept of the

General Staff, providing a new cultural dimension comprised of men of character and intellect that did not command but reconfigured the existing military social order to adapt to the challenges of the era.⁹

In *Bildung*, Scharnhorst sowed the seeds for a new generation of Prussian leaders, breaking the prevailing stereotype of the middle class and transformed the army with a new spirit, the model for developing the professional officer corps.¹⁰

¹ Charles Edward White, *The Enlightened Soldier* (New York: Praeger, 1989), 9.

² Marguerita Z. Herman, *Ramparts, Fortifications from the Renaissance to West Point* (New York: Avery Publishing Group Inc., 1992), 109.

³ Azar Gat, *The Origins of Military Thought* (Oxford: Clarendon Press, 1989), 156.

⁴ White, *The Enlightened Soldier*, xii. Charles White, author, interviewed by author, 26 January 1998.

⁵ Ibid., 35.

⁶ Ibid., 49.

⁷ Azar Gat, *The Origins of Military Thought*, 167.

⁸ Ibid., 34.

⁹ Ibid., 184.

¹⁰ Ibid., 185. Charles White interviewed by author, 26 January 1998.

CHAPTER 4

Laying the Foundation for the Roadmap

Scharnhorst faced a typical challenge of the age, having to convince the establishment that the military had to adjust to the challenges of the time, even if it meant rethinking societal norms and priorities. By re-educating the status quo to new opportunities, the Prussian military developed an entire generation of capable soldiers that were instrumental in achieving the ambitious goals of the future state. Today's corporate mindset sponsors opportunities for new thinking under the label of "thinking outside the box." It represents a frame of mind in dealing with opportunities that are out there and have not yet been integrated into institutional policy or procedure. However, there is a common tendency among the institution's membership to overreact to something new and oversubscribe to its potential. For cultural evolution to be effective today, it requires a considerable amount of commonsense, direction, creativity, and trust. What is significant about *Bildung's* application for today's challenges is it focuses on culture as the common ground for forward progress, a foundation for alliance/coalitions to penetrate the space medium.

Predicting the future is a big business in the global marketplace; a novel approach to solving challenges because it relies on an ability to think rationally towards a future time. However, it is a vulnerable science. In providing a roadmap for alliance/coalition

opportunities, logic must prevail. Recent works such as Jacques Gansler's *Defense Conversion, Transforming the Arsenal of Democracy*, reflect a cultural formula for defense conversion in times of adapting to major changes such as the end of the Cold War. The formula has parallels for alliance/coalition penetration of space; to include developing a clear vision statement by leadership, establishing a strategy for development and frequently reviewing it and taking early successes in the transition and repeat the process to gain acceptance and confidence.¹ This reflects *Bildung*; demonstrating the mental discipline to handle change, re-educate to new directions and complement the leading edge of perceived progress represented by technology. Understanding culture, therefore, serves as the baseline for human evolution in the next century's era of information awareness.

¹ Jacques Gansler, *Defense Conversion, Transforming the Arsenal of Democracy* (Cambridge, MA: The MIT Press, 1995), 222-224.

CHAPTER 5

Culture—The Baseline

Probably the most difficult point to make and make clearly is that not only is culture imposed upon man, but it is man in a greatly expanded sense. Culture is the link between human beings and the means they have of interacting with others. The meaningful richness of human life is the result of the millions of possible combinations involved in a complex culture.

--Edward T. Hall ¹

Hall's analysis of mankind spans over fifty years of research and study. It is noteworthy that the penetration roadmap takes the course of understanding humans through culture because it is the common ground for all participants. Everyone has a distinct culture. Understanding it is perhaps the most difficult challenge. Culture is often conceived as a product, such as a book, music, plays, etc.; in fact, it is more accurately described as a process.²³ Culture presents itself whenever people try to deal with their existence in a common situation. Each culture is a unique complex of attributes that are based on actions and interactions. They subsume every area of social life.⁴ Culture equally considers material, intellectual, and organizational dimensions as part of a whole. To deal with these dimensions, culture develops patterned ways of thinking, feeling and reactions acquired and transmitted mainly by symbols, which constitute the distinctive achievements of human groups, creating an essential core that consists of traditional ideas and their attached values.⁵ Cultures evolve over time, becoming modified over the years

through the practical activities of daily life through the daily stresses of competing goals and influences.⁶ However, culture is an enigma, hiding much more than it reveals. As evolution progresses to new dimensions of existence, culture evolves subconsciously as well through a hidden dimension, one that reflects a subliminal level of communication.⁷ Strangely enough, what hidden dimensions there are in one's culture, remain hidden most effectively from its own participants.⁸

To better understand culture's dimensions and their impact requires awareness of mankind's most familiar expression of communication, the language tool. Culture employs language to convey meaning and provide for the expression of the culture itself.⁹ In the study of languages, one can safely assume nothing because no two languages are alike. Some are so dissimilar that they force the speaker into two different images of reality.¹⁰ Language, once established, further constrains the individual to perceive in certain ways.¹¹ Language serves as a social instrument that preserves and promotes social interests as much as it transmits information.¹²

Culture is also a silent language based on complementary dimensions of time and spatial dynamics.¹³ The temporal dimension offers a distinct cultural identity, communicating as powerfully as language. Edward T. Hall cited time as the dominant organizing principle in American culture, particularly the military culture.¹⁴ Time impacts on the physiological state as well as the foundation of knowledge; whereby institutions influence its meaning, influencing judgement as well as serving as a source of physical and mental stress.¹⁵

Spatial dynamics comprise a second important cultural dimension. Territoriality is an integral part of thinking with every living organism having a detectable limit that

marks where it begins and ends. Territoriality becomes highly elaborated and unique from culture to culture.¹⁶ This dimension can span from simple possessions at an individual level to national claims of sovereignty.

Another dimension of culture concerns fiscal dynamics, one of the most important influences on society. It reflects the management of money, a significant gauge by which both progress and potential is measured. Fiscal realities often fuel the tempo of activity, particularly in a military environment where annual budgets are critical. Military cultures can be measured by the strength of the fiscal dimension, determining what can be possible in terms of access to weapons and supporting military operations.

Taking culture's multi-dimensional foundations and establishing a roadmap may not appear to be a ready-made solution for the world's challenges. However, culture does provide an appropriate baseline for understanding people, a critical ingredient for gauging the future. All conflict occurs in a cultural context that shapes the direction and flow in several ways. Conflict reflects cultural priorities, but also serves as a means by which to alter those priorities.¹⁷

In the nuclear era of the 1950's, the threat of tremendous devastation from advanced weaponry caused social scientists to rethink mankind's role in the evolutionary process; reflecting new cultural priorities for modern civilization. The noted anthropologist of the era, Robert T. Oliver, provided a perspective:

“Peoples in separate cultures and separate nations are concerned about different problems and they have different systems of thinking about them. What seems important to us is not necessarily important to everyone. Our logic may not be theirs; and our very faith in rationality may be counter-matched by their faith in irrationality. What we consider proof of a particular proposition, they may consider irrelevant. What we need most of all is *re-education* (sic)—not just an enlarged, or more systematic, or

more thorough education, but an actual substitution of a *world view* (sic) for the parochial view within which we have been nurtured.”¹⁸

Oliver’s re-education to achieve the worldview is analogous to today’s *Bildung* for cultural awareness. The more attention paid towards understanding culture, the more time spent learning about one’s own system.¹⁹ In establishing a framework for an alliance/coalition to penetrate the space medium and achieve an effective worldview requires awareness of cultural dimensions, as well as establishing common ground across an international spectrum. This is effectively accomplished in today’s modern military culture, particularly as it subsumes modern and emerging technologies.

¹ Edward T. Hall, *The Silent Language* (Greenwich, CN: Fawcett Publications, 1959), 166-167.

² Gillian Bottomley, *From Another Place, Migration and the Politics of Culture* (Hong Kong: Cambridge University Press, 1992), 7.

⁴ Raymond Cohen, *Negotiating Across Cultures* (Washington, D.C.: United States Institute of Peace Press, 1991), 9.

⁵ Ibid., 9-10.

⁶ Thomas Sowell, *Migrations and Cultures, A World View* (New York: Basic Books, 1996), 378.

⁷ Cohen, *Negotiating Across Cultures*, 153.

⁸ Hall, *The Silent Language*, 39.

⁹ Marshall R. Singer, *Intercultural Communication, A Perceptual Approach* (Englewood Cliffs, N.J.: Prentice-Hall, 1987), 5.

¹⁰ Hall, *The Silent Language*, 96.

¹¹ Singer, *Intercultural Communication*, 5.

¹² Cohen, *Negotiating Across Cultures*, 26.

¹³ Hall, *The Silent Language*, 15.

¹⁴ Ibid., 119.

¹⁵ Ole R. Holsti, “Crisis, Stress, and Decisionmaking,” in *The War System: An Interdisciplinary Approach*, (Boulder, CO: Westview Press, 1980), 496.

¹⁶ Hall, *The Silent Language*, 146.

¹⁷ Ross Stagner, “Personality Dynamics and Social Conflict,” in *The War System: An Interdisciplinary Approach*, (Boulder CO: Westview Press, 1980), 21.

¹⁸ Robert T. Oliver, *Culture and Communication* (Springfield, IL: Charles C. Thomas, 1962), 155.

¹⁹ Hall, *The Silent Language*, 39.

CHAPTER 6

The Military Vocation—The Roadmap Refined

Defining a cultural system like the military is fraught with generalizations and stereotypes; a difficult challenge to explain one of the most important social forces of world history. Cultures compete at many levels, particularly in warfare. The outcomes of wars of conquest can determine what language the descendents of the combatants will speak for centuries to come, what concepts will organize their thoughts, and what values will shape their moral universe.¹ To define the military's evolution requires a better understanding of culture to more effectively gauge the impact of the changes underway.

Modern military cultures are in transition because cultural dimensions are changing. The decision-action cycle that helps comprise a military culture's temporal dimension is accelerating, resulting in a decline of the life span of ideas, concepts, procedures and organizations.² The spatial dimension of territoriality has changed with the end of the cold war and the evolving information age and its global arena. A new generation of leadership has no memory of the start of the cold war and a generation is now coming into professional military life without any cold war experience whatsoever.³ In turn, culture's fiscal dimension is affected by perceptions of diminishing threat, resulting in declining budgets; yet, a simultaneous yearning for new and advanced technologies.

New frontiers such as space require traditional military cultures to reevaluate present operations and come up with new educational opportunities that articulates the future so that it is clearly understood by members. Presently, the quest to take American military culture into the 21st century is underway through visionary statements such as Joint Vision (JV) 2010, U.S. Air Force's Global Engagement: A Vision for the 21st Century Air Force and USSPACECOM's Vision for 2020. These documents represent ideas in evolution, representing a response to the dynamics of today by providing a template of what is perceived reality within the U.S. defense community. Each provides an answer to the priorities and direction of the President's NSS. The conceptual framework provides a foundation for future military operations and doctrinal development.

There are several available official written sources for those who wish to further interpret the global arena. U.S. joint doctrine contained in Joint Publication 3-0, *Doctrine for Joint Operations*, Chapter VI, "Multinational Operations," provides a present day doctrinal framework for U.S. military operations in a multinational environment. It stresses the theme that successful multinational operations will pay greater attention to cultural differences and recognize each partner's unique cultural identity. Today's version of Joint Publication 3-0 sees language as the primary cultural difference; however, distinct cultural traits and dimensions are not further portrayed beyond a brief discussion on religion. Cultural dimensions of time, spatial and fiscal reality are not explored or mentioned. Also, culture's hidden dimension' is not accounted for.⁴

Doctrine serves as a foundation for thinking at the highest level in a military culture. Joint Publication 3-0 defines the multinational relationships in succinct terms. An alliance is a result of formal agreements, whereas a coalition can be acquired through ad

hoc arrangements. The alliance is long-term, while the coalition serves a purpose that can be limited in duration.⁵ Each multinational relationship has its own personality, possessing different traits and characteristics. ⁶ Joint doctrine prescribes that both relationships require closer cooperation among all forces.⁷

Besides doctrine, the role of the senior in the military culture is critical. All prior successful cultural transformations have clearly shown the need for a single coherent leadership and direction.⁸ This provides the vision, leadership, and inspiration for the forces to engage in conflict. Senior leaders must be able to insure forces in command achieve the objective, be it changes in today's social frameworks through diversity or new frontiers such as IO. The recently retired Air Force Chief of Staff, General Ronald Fogleman, exemplified a spirit of *Bildung* when he introduced and implemented his vision into the Air Force mainstream during his tenure with Global Engagement , Air Force Core Values, and Battle Lab architectures. General Fogleman continued to push the theme of change into his service culture, defining an Air Force that must be engaged across the spectrum. Like Scharnhorst, Fogleman called for a mental fitness not only from members of the Air Force, but from policy makers, decision-makers, and commanders in chief (CINCs).⁹ The purpose behind his effort was to groom future forces to effectively employ technology's leading edge.

¹ Thomas Sowell, *Migrations and Cultures, A World View*, (New York: Basic Books, 1996), 384.

² Steven Metz, "Strategic Horizons: The Military Implications of Alternative Futures," in *Readings for Future Conflict Studies* ed. Vikki Anderson et al. (Maxwell AFB, AL: Air University Press, August 1997) 157.

³ Michael R. Gordon, "Mood Contrasts and NATO," *Washington Quarterly* (Winter 1985), 107-108.

⁴ Joint Publication 3-0, VI-4.

⁵ Ibid, VI-1.

⁶ Martha Maurer, *Coalition Command and Control* (Washington, D.C.: National Defense University, 1996), 10.

⁷ Joint Publication 3-0, VI-4.

⁸ Gansler, *Defense Conversion.*, 230.

⁹ General Ronald R. Fogleman (ret.), “Introduction,” in *Air and Space Power in the New Millenium*, ed. Daniel Goure et al. (Washington, D.C.: The Center for Strategic and International Studies, 1997), xxx.

CHAPTER 7

“Fortress” Technology—The Evolving Cultural Battleground

“The art of fortification does not consist of rules and systems, but lies solely in good sense and in experience.”

--Sebastian le Prestre de Vauben. ¹

The 21st century global community will redefine technology’s impact on culture. The marketplace is prompting new demands on communication, knowledge and transportation technologies, creating an artificial life as reality. Significant advances in technology are raising both public expectations and the demand for what technology can provide. CNN, for example, is looking beyond present technology to both meet the cultural demands and human limitations of its customers as well as compete effectively in the evolving information arena.²

In the context of the information age, the leading edge of technology and associated national policy represents a modern-day version of the traditional fortress, citadel and moat. In the 20th century, technology modified the traditional military fortification with defensive perimeters now transitioning to invisible software revetments. History provides an interesting parallel to the technology behind the defensive perimeter. The acknowledged champion of fortification design was Vauben (1633-1707).³ He enabled the French under Louis XIV to maintain the leading edge of military technology through his superior designs.⁴ Designing fortifications was not a function of rote procedures for

Vauben, it was a display of artwork along the natural terrain. His strategic vision was so effective that he helped create for France a simplified, yet rationally designed ring of fortresses along the entire frontier. His network created a formidable array of defenses that effectively countered the adversaries of the era.⁵

Today, national or proprietary policy represents the visible fortress, protecting technology's citadel of inner secrets. Those who have a political 'need to know' will gain knowledge of technology's limits. Allies and coalition partners are included in this transfer of technological knowledge, sharing a responsibility to protect the secrets to ensure overall mission success.⁶ Within the U.S. government, National Disclosure Policy (NDP) serves as a simple fortress, providing guidance on what can be shared and what should be defended.⁷ Joint and service doctrine further serves as the wall of the fortress, defining the limits of protection by calling for information sharing that is mission essential, effects lower level operations, and is perishable."⁸ Foreign disclosure and release guidance serves as the modern day version of the drawbridge for national security in the global arena. Access through the drawbridge equates to power. Whoever lowers or raises the bridge controls the future battleground, be it outside the fortress or at the gate of the citadel. For alliance/coalition penetration of the space medium, it is time to turn to Vauben's art, employing the cultural terrain to ensure maximum benefit of technology's leading edge. *Bildung's* application towards this effort calls for cultural awareness be automatically included in the deliberation of restrictive policy (the defining parameters of the fortress) as well as the guideline for application to an alliance/coalition members.

Space technology serves as the outreach of today's technological fortress providing a first line of defense for the space faring nation. It is not automatically accessible to the global community; instead, it resides within the domain of the space-faring nation or major industry. Subsequently, maintaining a leading edge of technology is an object of national prestige, recognition and future survival. Technology will define the fourth medium's role for future warfare; in turn, it will also define alliance/coalition terms. Space-faring nations will possess a greater influence in shaping roles more than dependent nations because they control the access. Technology has shaped the space culture of today and will play a major role in its future.

¹ Herman, *Ramparts*. 40.

² Kevin Ivey, CNN Future Planner, interviewed by author, 11 November 1997.

³ Herman, *Ramparts*, 39.

⁴ Ibid., 2. Vauben was also a master of the seige.

⁵ Ibid., 43.

⁶ Graham Jones, *The Role of Science and Technology in Developing Countries* (London: Oxford University Press, 1971), 6.

⁷ Joint Publication 3-0, VI-10.

⁸ Ibid.

CHAPTER 8

Space—Culture in Transition

“The utilization of space means in war, as well as in peacetime, widely increases the capability of the Armed Forces and upgrades their combat readiness, and helps and facilitates the effective employment of various Services of the Armed Forces. The use of military space means in support of the Armed Forces is an entirely new and significantly important phenomenon.”

--Voroshilov Lectures, 1973 ¹

A space culture started to evolve in the latter half of the 20th century. When access became technologically feasible, modern society became acculturated to the reality that space was an integral part of existence. Radio, television and film industry reinforced this by creating a barrage of space images that reflected cultural perspectives. The information age implanted its mark on the society by increasing exposure to the role that space plays in everyday lives. The military culture played a significant role in this process. For the former Soviet Union, space played a major role in their quest to achieve parity with the West. Their space culture revolved around legitimate heroes and pathfinders into the medium as well as applications to modern warfare. The Voroshilov lectures reflected that emphasis. During the Cold War, space was accessed in large part due to military missions being effectively served by the medium. Military symbols proliferated in a space environment where technologies and fictions converged.² The influence of the space medium on the entertainment industry became a portrayal of a

warrior culture in a totally foreign environment. Entertainment media such as ‘Star Wars’ and ‘Star Trek,’ portended the martial arenas of space. Yet, peaceful symbols of space exploration were equally influential on American culture with successful programs such as the Apollo moon landings, Mars Pathfinder mission, and the Hubble space telescope.

Today, the evolving space culture revolves around a technology that relies upon the inventory of satellite systems that serve civilian, commercial, and military space missions with timely information.³ People acquire their identity from the systems they fly/control; becoming wedded to the space missions that are accomplished by the satellites, to include Surveillance, Warning, Communication, Navigation, and Weather.⁴ Temporal and spatial dimensions of the military space culture are unique in make up and movement, covering a range of physical laws that govern a smaller mass moving around another planetary mass. The spatial dynamics include low-earth orbits, molniya or geostationary. They each have a unique temporal identity in relation to the earth, be it a 90 minute period for a low-earth orbit, 12 hours for molniya, or 24 hours for a geostationary orbit.⁵

The fiscal dimension of space culture is a major force behind all future visions. Technology that is required to develop and maintain space systems places a major burden on the economy of a space-faring nation and is beyond the budgets of most alliance/coalition members.⁶ The costs are extremely high, both in fiscal terms and the risk involved. Current U.S. estimates for launch and placing an object into low-earth orbit (LEO) are at \$10,000 a pound.⁷

With each successful application, space culture becomes more attractive to the military customer, both allied and adversary. Today’s alliance/coalition members

recognize the value and are now integrating space systems in their planning for future operations. They are also acquiring their own capability. For example, the Western European Union (comprised of several European nations that are also NATO members) established the Satellite Center at Torrejon Air Base, Spain to provide reconnaissance exploitation from indigenous overhead systems (ie., French SPOT and *Helios*).⁸

The commercial arena is quickly becoming a lucrative channel for national space awareness. Global telecommunications is establishing new communication constellations such as Iridium, which can potentially support a space-based intelligence industry that will have tremendous implications for future alliance/coalition operations. From this opportunity, a new culture of space experts will evolve providing both commentary and evaluation of terrestrial force activities.⁹

Experience has conclusively shown that space access directly correlates to successful military applications. The more systems employed in space, the greater the potential to support existing terrestrial missions. Breakthroughs in operational art are occurring as a result of new constellations of systems being put in place. This was effectively demonstrated in the Desert Storm conflict where space was introduced as a major player in conventional conflict. Terrestrial navigation was revolutionized by the Global Positioning System (GPS). The system was so effective and desirable that it proliferated throughout the maneuver forces, resulting in a desert warfare experience that successfully conducted operations over vast areas of featureless terrain.¹⁰ In today's information arena, more GPS success stories are forthcoming, expanding its marketability and creating new challenges such as 'navigation warfare.'¹¹

As the number of space-faring nations grows, the call for continued U.S. space dominance will also be heard. Senior U.S. military planners are encouraging the development of robust capabilities for control of space, continued use of viable nonmilitary space capabilities, services and products when they are beneficial and cost effective; as well as envisioning fully integrated space capabilities into air, land, and sea systems.¹² However, the stage is set for an alliance/coalition space culture to become an integral part of the U.S. military's space vision.

¹ Graham H. Turbeville, edited by, *The Voroshilov Lectures, Volume II* (Washington, D.C.: National Defense University Press, 1990), 115.

² Bender, *Culture on the Brink*, 2.

³ Kenneth A. Myers and John G. Tockston, "Real Tenets of Military Space Doctrine," *Air Power Journal* (Winter 1988), 62.

⁴ Jonathan N. Goodrich, *The Commercialization of Outer Space* (New York: Quorum Books, 1989), 3.

⁵ Bhupendra Jasani, *Outer Space, A Source of Conflict or Co-operation?* (Tokyo: United Nations University Press, 1991), 211.

⁶ Timothy Garden, *The Technology Trap: Science and the Military* (London: Brassey's Defense Publishers, 1989), 42.

⁷ Colonel Victor Budura, Air War College, interviewed by author, 20 February 1998.

⁸ Michael R. Mantz, *The New Sword, A Theory of Space Combat Power* (Maxwell Air Force Base, AL: Air University Press, 1995), 7.

⁹ Richard I. Neal, "Planning for Tomorrow's Conflicts: A Recipe for Success," *Naval War College Review* (Autumn 1997), 14.

¹⁰ Martha Maurer, *Coalition Command and Control*, 45.

¹¹ Douglas Richardson, "GPS for a New Millennium," *Asian Defense Journal* (June 1997), 52.

¹² Daniel Goure, *Air and Space Power in the New Millennium*, 104.

CHAPTER 9

Alliance/Coalitions—The Roadmap Applied

The experience of the past four years of active involvement in space support to theaters by all Space Support Teams showed the first barrier to overcome was to convince U.S. forces of the relevance of space. Exercises and support to crises such as Joint Endeavor proved a lucrative opportunity to effectively demonstrate space support to the war-fighter. Subsequent assignments of space operations personnel to overseas installations created a permanent cadre of in-theater experts. A parallel development occurred with an in-depth space curriculum implemented with professional military education. Innovative programs were implemented at Air University, covering a broad range of space issues to all students, to include international officers. At Air War College, the space medium became a major part of the core curriculum. Students and faculty were introduced to a broad range of space issues covering space systems identification to strategy development.

Within this framework, the cultural roadmap for alliance/coalition penetration of the space medium was applied. A lucrative opportunity was exercised in February 1998 within the professional military education environment with 41 senior international officers in residence at Air War College responded to queries about the relevance of space to their nation's respective goals and priorities (See Appendix for a synopsis of

responses). The survey's objective was to gauge their perceptions of future challenges offered by the space medium. The responses highlighted cues for alliance/coalition space penetration, to include the role of the space faring nation, role of the alliance/coalition member, war-fighting cultures in transition and opportunities for re-education through the JSST and component SST's. Of the 24 respondents, all were aware of space and its implications for their respective country.

For many of the international officer participants, space awareness came with the Gulf War. General Horner related that a conscious decision was made early on in Desert Storm to acquaint the alliance/coalition to space capabilities. Data from USSPACECOM missions of navigation and warning were shared. There was also an increased emphasis on intelligence sharing.¹ For a few of the coalition nations, the conflict was their first exposure to space-derived information.

The 1998 survey showed the international officers were very positive about establishing more opportunities to employ space in planning and operations, despite the fact that developing a future vision for space still is in its infancy with many of the national objectives of the international officer's own country. The role of the US and other space faring nations was recognized as the critical lynchpin towards developing military capabilities through space. An important consideration for U.S. military planning gleaned from the responses was the JSST and component SST's were unanimously considered the most effective way to integrate military forces to space in the near term. This is important feedback for USSPACECOM, which has traditionally been hesitant to share data for many established Cold War concerns. USSPACECOM's

management and control during this evolution reflected a unilateral approach towards protecting the space infrastructure. However, changes are now underway.

Parallel to ongoing JSST/SST operations and the increased space awareness emphasis at Air War College, USSPACECOM initiated the *Vision for 2020*, a far-term look for the evolving command. One of the four major concepts, Global Partnerships, provided a conceptual framework to address the global arena of civil, commercial, and international space systems through several key initiatives, to include: sharing space-based information, influencing space systems designs, satellite sharing, space system architectures to facilitate rapid flow of information, and international standardization. At the same time, U.S. military planners realized that multinational operations and alliance/coalitions are an integral part of 21st century military architectures and require further attention. The dramatic growth of the commercial sector encouraged non-governmental agencies to push for technological advances.²

Global Partnerships was a fresh concept at the time of the survey and its potential impact on alliance/coalition thinking is yet to be determined. However, costs will dictate the manner by which an alliance/coalition member may subscribe to a space capability. Sharing the high cost merges two dimensions of the evolving space culture, fiscal and spatial. This cultural merger will test the space-faring nation's ability to jointly manage the fourth medium with alliance/coalition members. The mantra of Fortress Technology will be invoked by those in power, prompting new efforts to charter the cultural terrain to find accommodation as well as insure security. How the alliance/coalition merger takes shape will illustrate the space faring nations concept of the worldview in the evolving global arena.

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- ¹ General Charles Horner (ret.), interviewed by author, 13 January 1998.
- ² United States Space Command, “Vision for 2020,” (August 1997), 8.

CHAPTER 10

The Mandate of Trust—Worldview Refined

“The best way to establish trust is to be truthful even if it hurts your interests over the short term. When dealing with a foreign leader always tell the truth even though you know they will not like the answer. You can be diplomatic. The second thing is keep your word. If you tell them you are going to do something for or even against them make sure you do it.”

--General Charles A. Horner¹

Success stories are required to make the roadmap relevant to present day thinking. Scharnhorst applied the concept of Bildung and helped reorient the Prussian military culture into a more modern and mature fighting force. Vauben employed the technology of his day and created a landscape of imposing structures that served as the foundation for military campaigns fought in the region. Horner applied common sense towards the formation of an alliance/coalition relationship that directly contributed to one of the most profound military operations of the modern era. Today’s rapidly evolving global arena is calling for a new culture to effectively integrate the opportunities presented by new technologies and the frontiers of the fourth dimension. It is a culture that will build upon the successes of the past and create a refined worldview. For today’s military evolution, it requires alliance/coalitions achieve a mandate of trust.

For alliance/coalitions to be effective in an information age calls for a mandate of trust be integrated with truth to the daily thinking and actions of its participants. According to the famous philosopher Martin Heidegger, truth is not about being right or

wrong, but accepting the powerful interplay of revealing and concealing, which shapes humanity's destiny. To make this reality in daily existence, Heidegger recommended that our body as well as our minds become "a happening of truth at work."²

A global evolution mandates a level of trust be established in order to progress forward into the 21st century. Doctrine points to the fact that the strength of the alliance/coalition relationship is based on perception, "advancing individual national interests." At the point that national perceptions start to diverge, alliance/coalition integrity and strength is tested.³ Due to its very nature, forward progress based on trust encourages alliance/coalition members to work closer together to effectively challenge the perceived threat. Penetrating the space medium through cultural awareness requires common ground. New initiatives such as Global Partnerships may be a worthy first step, but they represent the perspective of a unique and distinct military culture. The duration of success is contingent upon increasing the trust within the alliance/coalition framework. Increasing the level of coverage provided by shared early warning is an example of using space capabilities to strengthen alliance/coalition relationships. What is further required is an institution of trust within the prevailing infrastructure.

A sought after objective for global vision would be to increase and institutionalize the level of trust and understanding between different cultures. If space serves as the new frontier for the global community, an alliance/coalition will perceive trust and/or mistrust as an important dynamic for gauging success within the fourth dimension. In advancing this evolving space culture, space-faring nations are now in position to define the terms of the alliance/coalition. Space cannot be visualized from terrestrial earth unless given the benefit of technology. Today, there is a profound level of trust associated with space-

derived technology. For example, 85 percent of the survey respondents stated they trusted data from space. The remaining 15 percent were not opposed, just wanted assurance that it passed the “reasonable test.”

Trust is required to ensure that what is perceived is in fact reality.⁴ This requires more attention towards communicating ideas, not just providing visual reality. In an alliance/coalition relationship, success hinges on consistent and verifiable perceptions that trust is integral to the spirit of the agreements between nations.⁵ The mandate of trust, therefore, assumes a physical presence by the alliance/coalition membership within the command itself. For USSPACECOM, the command has the advantage of already being co-located with the headquarters of the North American Aerospace Defense (NORAD) command and its Canadian membership. Perhaps it is time that the strongest consideration should be given towards establishing a multi-national Global Partnerships element within USSPACECOM as well. A multi-national element would serve as a cultural advisory board to existing and developing operations that will enhance the command’s global awareness, partnerships and presence.

The model for this element exists today at the Air War College with the international officer contingent. Not only has daily discussions between the membership been worthwhile, Air University has taken the unprecedented step of fully integrating the international officer contingent into the upcoming Tandem Challenge war game. Military benefits from space access are being communicated to the maximum limits prescribed by NDP, doctrine, and trust. The re-education process among alliance/coalition cultures in this environment offers a constant, consistent, and trustworthy experience for its members. The Air University experience takes Global Partnerships one step further and

provides a role model for a similar element to be integrated with the USSPACECOM vision for the evolving global arena. The mandate of trust is being established through consistent application of the international membership and future command visions will require increased attention to this reality.

¹ General Charles Horner (ret.), interviewed by author, 15 January 1998.

² Bender, *Culture on the Brink*, 68.

³ Joint Publication 3-0, VI-1.

⁴ Ibid., 97.

⁵ Dale E. Zand, *The Leadership Triad: Knowledge, Trust, and Power* (New York: Oxford University Press, 1997), 93.

CHAPTER 11

Synthesis

“If we seek to understand a people, we have to try to put ourselves, as far as we can, in that particular historical and cultural background...One has to recognize that whatever the future may hold, countries and peoples differ in their approach and their ways, in their approach to life and their ways of living and thinking. In order to understand them we have to understand their way of life and approach. If we wish to convince them, we have to use their language as far as we can, not language in the necessary sense of the word, but the language of the mind. That is one necessity. Something that goes even much further than that is not the appeal of logic and reason, but some kind of emotional awareness of other people.”

Jawaharlal Nehru, 1950¹

Life’s challenges require understanding, particularly in understanding the language of the mind, another way of describing culture. For military culture, *Bildung* serves as a framework for understanding that language. The evolution of modern militaries through the efforts of early 19th century visionaries such as Scharnhorst, provides a model for a new military social order, based on a culture of intelligence and not noble birth. *Bildung* became a recipe for constructive change. It is time to reintroduce *Bildung* into the cognitive thinking process of the global arena.

Today’s technologically driven world defines how progress is measured. It becomes all-encompassing for a culture such as the United States; particularly within the confines of the modern military. Recent military visionaries such as Fogleman and Horner were

unconscious adherents of *Bildung*, applying the framework for the future by re-educating the membership to new and logical ways of doing business within the technological spiral and its unknown dimensions. Perhaps, it is safe to say that advancing a culture was not envisioned in their view of the future. Now 21st century challenges brought by space medium access require a similar re-education for alliance/coalition futures. Culture will remain an integral part, whether accepted by senior leadership or not. However, the time has come to bring culture out into the open and become partially institutionalized within the military framework. A two-pronged maneuver is proposed.

First, continue technology's advance for its momentum and investment is critical towards achieving greater opportunities to accessing and develop the fourth medium. Technology continues to remain the critical link between mankind's knowledge base and the space infrastructure that is employed. However, the lesson of Vauben's art should be the guide for communicating the limits of technology according to the corresponding cultural terrain that comprises the alliance/coalition.

Second, apply *Bildung* towards conventional military thinking and re-educate the forces towards cultural awareness and opportunities for increased interaction. The prevailing worldview should be structured to go beyond Global Partnerships and develop new missions to maximize alliance/coalition participation and potential. As the survey reflected, the alliance/coalition members are space aware and will look for space faring nations such as the U.S. for leadership in making the fourth dimension a integral part of future operations. Only through extensive interaction available through increased cultural awareness will each nation be able to learn more about themselves. As Edward Hall implied throughout the discussion of culture, increased cultural awareness efforts

will help unlock the mystery of what makes mankind effective.² This requirement will increase as the fourth dimension of space becomes more of an integral part of daily existence.

Finally, a major step towards alliance/coalition space awareness should be accomplished by placing a greater effort in re-educating personnel to the dimensions of culture, particularly through the tool of language. Space-faring nations should focus greater attention to cultural awareness through foreign language training and applications to alliance/coalition operations. At first glance there will be tremendous skepticism to this recommendation, reflecting an entrenched cultural bias. There is an overwhelming tendency in today's modern societies to promote a monolingual dominance upon the world stage. English is today's cultural language of the marketplace, aerospace, and to a large degree, science. The evolving cultural ignorance could jeopardize future visions for global arena, as it evolves through technology. This modern day *Bildung* requires rethinking on the part of policy-makers to make concerted efforts to include multi-lingual awareness as an integral part of education and professional military education. The information age is already assisting this opportunity through automatic language translator software. The potential to develop this capability for textual materials is coming. However, being able to speak beyond the written word not only improves the level of communication and trust as well as enhances understanding of the foreign culture.

Increasing cultural awareness and learning additional languages become the cultural means by which the global community is nurtured. This cultural trait provides an organization with a finite number of ways to ordering behavior.³ For the U.S. military, it

means taking the example of today's special forces, who have extensive experience in cultural awareness training and learn an additional foreign language as part of their ongoing job requirement.⁴ Space forces should not be exempted from this process. If they are to be the true global warrior and focus on the Global Partnership vision, then a multi-cultural aware and multi-lingual capable space culture should become a requirement. In turn, alliance/coalition partners should reciprocate and step up to this requirement. If the global arena is to be accessed through space, then its members should work together for more effective communication. Cultural awareness and language training for a global environment is the obvious starting block.

Finally, a central premise for today is that the ideology of progress espouses the belief that technological development and enhancement of human abilities will move forward together.⁵ If this ideology is to gain further acceptance within military circles, then doctrine should reflect that duality. In the evolving global arena, the time has come for cultural awareness thinking to become an integral part of the military's cognitive process. Otherwise technology, unless communicated like Vauben's art of fortification, becomes an oppressive force and a potential obstacle towards 21st century progress.

The space penetration roadmap for alliance/coalitions remains a cultural awareness path. It relies on the historical experience of successful applications to include Scharnhorst's *Bildung*, Vauben's art, and Horner's trust. The roadmap provides a balance between the limitless growth of technology and the requirement for increased understanding between divergent cultures. It is not an easy journey, but will better serve the next century's challenges.

¹ Jawaharlal Nehru in *Culture and Communication*, ed. Robert T. Oliver (Springfield, IL: Charles C. Thomas, 1962), ii.

² Edward T. Hall, *Beyond Culture* (Garden City, N.J.: Anchor Press, 1976), 184.

³ Elizabeth Kier, *Imagining War* (Princeton, N.J.: Princeton University Press, 1997), 31.

⁴ Joint Pub 3-05, *Doctrine for Joint Special Operations*, II-15.

⁵ Bender, *Culture on the Brink*, 193.

APPENDIX

International Officers – Space Awareness

- 1. Space, to the United States, is rapidly becoming an integral part of the global strategy. Do you see your country developing a similar role for space in the 21st century?**

a. Yes, because _____.

*11 respondents replied in the affirmative. Two interesting responses reflect the future:
“We need to get our ‘piece of this cake.’”*

“Space language would be the common language in future.”

b. No, because _____.

13 respondents reflected on the economic limitations that their respective country was facing as it pertained to space. One response reflected the perspective of the evolving global arena:

“My country does not strive for Global Full Spectrum Dominance.”

- 2. Will your country rely on commercial space to support military operations? If yes, what percentage of your space support will be from commercial sources. (Please circle appropriate response)**

- a. No (10)
- b. Yes, 25 percent (2)
- c. Yes, 50 percent (4)
- d. Yes, 75 percent (2)
- e. Yes, 100 percent (3)

3 respondents did not put a percentage figure towards this answer.

- 3. Do you envision a space force taking the place of the air force in your country in the 21st century?**

a. Yes, because _____.

Only 3 respondents saw the evolution in the 21st century.

b. No, because _____.

Economic considerations played a major role in the negative. However, two respondents provided thought provoking insight.

"We are against the militarization (sic) of space."

"The major battles will be waged in earth."

4. As a career air force officer, how would you react to a future warfighter operating a computer console versus a pilot operating an aircraft?

17 respondents reflected change is inevitable. However, the counter answers were equally intriguing.

"Even the most sophisticated computer cannot replace the human being."

"I will try to Email him."

5. If the computer console were to take the place of the pilot, how many years out would you envision the demise of the fighter plane? (Please circle appropriate response.)

a. 20 (3)

b. 40 (9)

c. 60 (6)

d. 80 (1)

e. 100 (1)

4 respondents did not provide a figure.

6. Do you trust the data acquired from space satellites?

a. Yes, because _____.

20 respondents were positive. There were skeptical responses, reflecting not a total trust, but a positive reflection on the capability.

b. No, because _____.

The remaining 4 respondents reflected not a total trust, but a healthy skepticism. "Provided it passes the common sense 'is this reasonable?' test."

7. In an alliance or coalition with the United States, what space role would you expect the U.S. to provide that would support the mission?

All USSPACECOM missions were addressed in part by the respondents. The majority of responses reflected warning, intelligence, and communication.

8. If you envision a space role for your nation in a future alliance or coalition, what would it be?

The mix of answers reflected a balance between communications, intelligence, and ground support. Two responses worthy of additional consideration were:

“We are only for peaceful cooperations (sic) and collaboration in space.”

“I prefer commercial space”

9. How would you envision educating your military forces to the space medium?

Over one-third of the respondents looked to a professional military education equivalent as the best mechanism towards educating their forces on space.

The most intriguing response was:

“By establishing initial classes for space education as well as peace education.”

10. US Space Command and components employ a Space Support Team (Joint, Air, Navy, Army). When they deploy to theater, would you like them to work with your forces?

a. Yes, because _____.

This response was endorsed by every officer. The answers ranged from perceptions of JSST capabilities (very positive) to just having access to space capabilities.

b. No, because _____.

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